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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/710,704	07/29/2004	Jake Friedman	PES-0212	4703
23462 7590 08/06/2007 CANTOR COLBURN, LLP - PROTON 55 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002			EXAMINER ALEJANDRO, RAYMOND	
			ART UNIT 1745	PAPER NUMBER
			MAIL DATE 08/06/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/710,704

Applicant(s)

FRIEDMAN ET AL.

Examiner

Raymond Alejandro

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 July 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>07/29/04, 03/06/06, 04/07/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statements (IDS) submitted on 07/29/04, 03/06/06 and 04/07/06 were considered by the examiner.

Drawings

2. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.
4. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Claim Objections

5. Claims 1, 4, 6, 9, 16-27 are objected to because of the following informalities: all abbreviations (i.e. MEA or GDL) should be changed and expanded to recite their specific terminology or nomenclature. Appropriate correction is required.
6. Claims 1, 4, 6, 9, 16-27 are objected to because of the following informalities: all parenthesis [i.e. (MEA) or (GDL)] should be removed, and the specifically abbreviated terms within the parenthesis should be either deleted or presented by using their specific terminology or nomenclature. Appropriate correction is required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
8. Claims 1-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
9. Claim 1 recites the limitation "the first electrode side" in lines 6-7 and "the second electrode side" in lines 10-11. There is insufficient antecedent basis for this limitation in the claim.
10. Claim 1 recites the limitation "the webbing" in line 17. There is insufficient antecedent basis for this limitation in the claim.

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11. The term "sufficient to" or "sufficient for" in claims 4, 6, 15, 19, 24, 26-27 is/are a relative term(s) which renders the claim indefinite. The terms "sufficient to" or "sufficient for" are not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The degree of how compressible or porous the carbon layer needs to be to have the claimed functionality is unknown or uncertain.

12. Claim 14 recites the limitation "the edge" in line 2. There is insufficient antecedent basis for this limitation in the claim.

13. Claim 23 recites the limitation "the first electrode side" in lines 6-7 and "the second electrode side" in lines 10-11. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

14. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

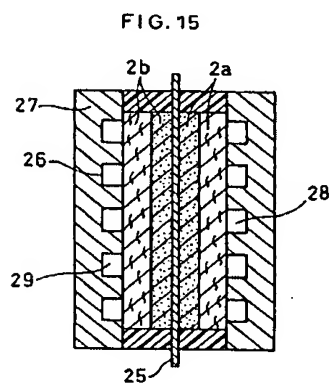
15. Claims 1-27 are rejected under 35 U.S.C. 102(b) as being **clearly** anticipated by Yoshida et al 2003/0064279.

The present invention is directed to an electrochemical cell wherein the disclosed inventive concept comprises the specific carbon layer (gas diffusion layer).

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With regard to claims 1 and 23:

Yoshida et al disclose a polymer electrolyte fuel cell (*the electrochemical cell*) comprising an ion conductive polymer electrolyte membrane, a pair of gas diffusion electrodes provided to sandwich therebetween the polymer electrolyte membrane (P0035, 0124-0125), thereby to form a polymer electrolyte membrane electrode assembly, and a pair of separator plates being provided to sandwich therebetween the polymer electrolyte membrane electrode assembly at the pair of gas diffusion electrodes and having gas flow channels to face the pair of gas diffusion electrodes respectively (P0035, 0124-0125), wherein the pair of gas diffusion electrodes respectively have a pair of catalyst layers to contact the polymer electrolyte membrane, and also have a pair of gas diffusion layers to contact the pair of catalyst layer (P0035, 0124-0125), wherein each of the gas diffusion layers comprises a carbon cloth having first mesh portions and second mesh portions, wherein the second mesh portions are coarser than the first mesh portions, and are distributed among the first mesh portions intermittently in a direction of the surface plane thereof (P0035, 0124-0125). *In this case, the gas diffusion layer represents the carbon layer comprising the integrated flow-channels and having the specified width.* **Figure 15** below illustrates the polymer electrolyte membrane 25; the gas diffusion electrodes 2a, 2b; and a pair of separator plates 27 having gas flow channels 26:



Yoshida et al extensively describe the gas diffusion layers as a comprising a layer of carbon cloth (P0035, 0037) or plural layers of carbon cloth (P0069), or carbon paper (P0073).

EXAMPLE I-2 exemplifies the use of a multi-layer carbon cloth 50 (P0095/FIGURE 5); or as comprising a porous supporting body 31, made of carbon fibers, a polymer layer 32, and a catalyst layer 33 to form the gas diffusion layer 313 (P0132/FIGURE 13).

FIG. 5

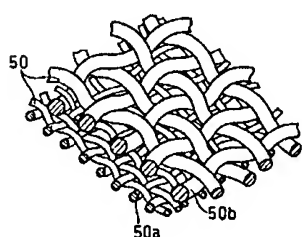
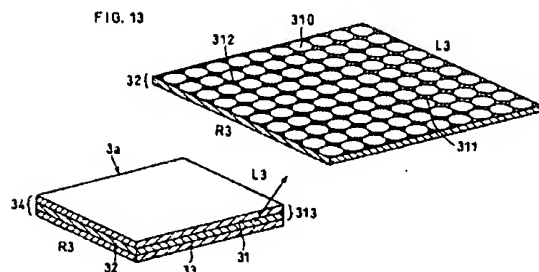


FIG. 13



With regard to claims 2-3, 6, 15, 19-21, 24-25 and 27:

Yoshida et al disclose that hydrogen is fed into the fuel cell (P0002). *Thus, the carbon layer of the gas diffusion layer is compatible with hydrogen.*

With respect to the specific electrical resistivity and compressible characteristic: Yoshida et al extensively describe the gas diffusion layers as a comprising a layer of carbon cloth (P0035, 0037) or plural layers of carbon cloth (P0069), or carbon paper (P0073). **EXAMPLE I-2** exemplifies the use of a multi-layer carbon cloth 50 (P0095/FIGURE 5); or as comprising a porous supporting body 31, made of carbon fibers, a polymer layer 32, and a catalyst layer 33 to form the gas diffusion layer 313 (P0132/FIGURE 13). *Thus, the specific electrical resistivity and compressible characteristic (and their respective sufficiency) are inherent characteristics of*

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the carbon cloth material. Accordingly, products of identical chemical composition can not have mutually exclusive properties, and thus, the claimed property (i.e. the specific electrical resistivity), is necessarily present in the prior art material.

“Products of identical chemical composition can not have mutually exclusive properties.” A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. In re Spada, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

See MPEP 2112.01 [R-3] Composition, Product, and Apparatus Claims

With regard to claims 4-5, 18 and 22-23:

Yoshida et al extensively describe the gas diffusion layers as comprising a layer of carbon cloth (P0035, 0037) or plural layers of carbon cloth (P0069), or carbon paper (P0073).

EXAMPLE I-2 exemplifies the use of a multi-layer carbon cloth 50 (P0095/FIGURE 5); or as comprising a porous supporting body 31, made of carbon fibers, a polymer layer 32, and a catalyst layer 33 to form the gas diffusion layer 313 (P0132/FIGURE 13). *Thus, any one of the additional layers may act as the pressure pad. Note that claim 5 recites that the pressure pad consists essentially of compressible carbon.*

With regard to claims 7-8:

Yoshida et al's carbon cloth or carbon paper or carbon layers are free of metal (P0035, 0037, 0069, 0073) because they do not discuss the inclusion thereof in the carbon material.

With regard to claims 9 and 26:

Yoshida et al disclose a pair of gas diffusion layers to contact the pair of catalyst layer (P0035, 0124-0125), wherein each of the gas diffusion layers comprises a carbon cloth having

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first mesh portions and second mesh portions, wherein the second mesh portions are coarser than the first mesh portions, and are distributed among the first mesh portions intermittently in a direction of the surface plane thereof (P0035, 0124-0125). *In this case, the gas diffusion layer represents the carbon layer comprising the integrated flow-channels and having the specified width.*

With regard to claims 10 and 17:

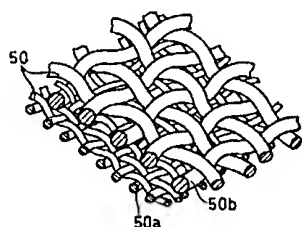
Reference numerals 18 or 118 in FIGURES 1 and 3, respectively are gaskets (P0004, 0092). *In this case, they also represents the frame member without fluid flow channels.*

With regard to claims 11-13:

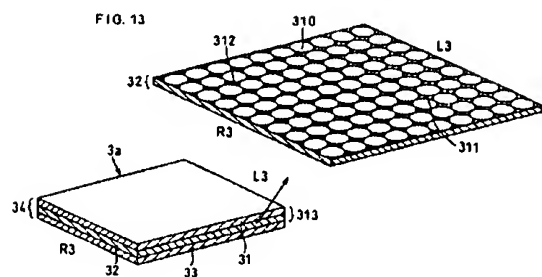
Yoshida et al extensively describe the gas diffusion layers as a comprising a layer of carbon cloth (P0035, 0037) or plural layers of carbon cloth (P0069), or carbon paper (P0073).

EXAMPLE I-2 exemplifies the use of a multi-layer carbon cloth 50 (P0095/FIGURE 5); or as comprising a porous supporting body 31, made of carbon fibers, a polymer layer 32, and a catalyst layer 33 to form the gas diffusion layer 313 (P0132/FIGURE 13). Each of the gas diffusion layers comprises a carbon cloth having first mesh portions and second mesh portions, wherein the second mesh portions are coarser than the first mesh portions, and are distributed among the first mesh portions intermittently in a direction of the surface plane thereof (P0035, 0124-0125). *In this case, the gas diffusion layer represents the carbon layer comprising the integrated flow-channels and having the specified width.*

FIG. 5



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With regard to claim 14:

Figure 13 above illustrates flowchannels extending to the edge of the carbon layer.

With regard to claim 16:

Yoshida et al disclose a porous supporting body 31 (P0132/FIGURE 13).

Thus, the present claims are CLEARLY anticipated.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond Alejandro whose telephone number is (571) 272-1282.


The examiner can normally be reached on Monday-Thursday (8:00 am - 6:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Raymond Alejandro
Primary Examiner
Art Unit 1745


RAYMOND ALEJANDRO
PRIMARY EXAMINER